

REMARKS

Claims 10, 12-20 are all the claims pending in the application. Claim 10 has been amended herein. Claim 11 has been cancelled without prejudice or disclaimer. This Response, submitted in reply to the Office Action dated October 28, 2008, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

Claim Rejections 35 U.S.C. § 102

Claims 10-15 and 20 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Sugano (US No. 6,485,287). Applicant respectfully traverses this rejection.

Claim 10

Claim 10 recites:

“A screw for use in an extruder comprising a cylinder for carrying a rubber material supplied from a hopper port at an upstream end of the cylinder by the screw, molding it into a predetermined sectional form and extruding it from a nozzle attached to a downstream end of the cylinder,

wherein a height of a flight portion of that part of the screw located below the hopper port is lower than a height of a flight portion located on a downstream side, said height at said part varies continuously in a peripheral direction over a predetermined rotational angle of the screw and the predetermined rotational angle is an angle beginning 90° before a position where the height of the flight is lowest and ending 90° after the position where the height of the flight is lowest.”

In rejecting claim 10, the Examiner asserts that Sugano discloses a screw for use in an extruder comprising “a cylinder” “wherein a height of a flight portion of that part of the screw (11) located below the hopper (5) port is lower than a height of a flight portion located at a downstream side, and said height at said part varies continuously in a peripheral direction over a predetermined rotational angle of the screw (See Figure 1 at 8)”. Applicant notes that the

Examiner bases the rejection solely on figures 1 and 6 and does not cite to any portion of the text of the patent.

MPEP 2125 states “Drawings and pictures can anticipate claims if they clearly show the structure which is claimed.” *In re Mraz*, 455 F.2d 1069, 173 USPQ 25 (CCPA 1972). However, MPEP 2125 further states “the picture must show **all** the claimed structural features and **how they are put together**.” *Jockmus v. Leviton*, 28 F.2d 812 (2d Cir. 1928)(emphasis added).

Therefore, in order to anticipate the structure recited in the present claims, Figs. 1 and 6 of Sugano must show all the features recited and must show the features arranged in the same way as claimed. For the reasons set forth below, Applicant submits that neither the figures nor the detailed description of Sugano anticipate all of the claimed features.

Sugano is directed to a noodle-making machine and includes a screw 8 disposed in a cylinder 4, with the cylinder having an opening disposed below a hopper 5. However, as shown in Fig. 1, the height of the blades (flight portions) of the screw is constant along the length of the screw and thus does not have “**a height of a flight portion of that part of the screw located below the hopper port is lower than a height of a flight portion located on a downstream**”, nor does the height vary “**continuously in a peripheral direction over a predetermined rotation angle of the screw**” as claimed. Specifically, Fig. 1 clearly shows that the blades (flight portions) of the screw 8 are flush with the inner surface of the cylinder 4 along the entire length of the screw.

Though the Examiner’s basis of rejection is not clearly set forth, the Examiner’s position appears to be that portion of the screw between the blades (flight portions) has a height less than the blades downstream. Applicant submits that if this is the case, the Examiner’s rejection is improper because the portion between the blades is not a flight portion and thus its height is not

the height of the blade (flight portion). Thus, Applicant submits that the claim 10 is patentable for at least these reason.

Further, claim 10 has been amended herein to recite “the predetermined rotational angle is an angle beginning 90° before a position where the height of the flight is lowest and ending 90° after the position where the height of the flight is lowest”. Support for this amendment can be found, for example, on page 6, lines 8 to 19 of the specification.. As this language plainly indicates, in an exemplary apparatus consistent with claim 10 the angle over which the height of the flying portion varies begins 90° before the point at which the height is lowest, and continues to a point 90° after the point at which the height is lowest. In other words, the total angle is 180°, with the center of the 180° being located at the point at which the height is lowest. *See* Fig. 2(b) for an exemplary embodiment. As this feature was previously recited in cancelled claim 11, which was previously examined, and is clearly supported in the originally filed specification (*see* page 6, lines 8-19, for example), **Applicant respectfully submits this the amendment does not add “new matter” and does not raise “new issues”.**

Further, according to Sugano, the diameter of the screw becomes small to mach with the cylinder bore. Therefore, there is not space between the wall of cylinder bore and the screw flight. Thus, in an apparatus according to Sugano, , it is impossible to reduce pressure fluctuation acting on the flight portion in the vicinity of the hopper port because material cannot flow backward through a gap between the screw and the cylinder wall.

Conversely, according to an apparatus consistent with the present claims, the height of flight portion is decreased over an angle of 90° in each direction from a point of minimum height. Thereby, there is space between the inside wall of the cylinder and the flight of the screw, and because there is a space which allows the return of the rubber

material, pressure fluctuation acting on the flight portion in the vicinity of the hopper port can be reduced. The reduction of the pressure fluctuation causes a reduction in the gauge fluctuation of the rubber material.

Sugano does not teach that the return of the material in the vicinity of the hopper port, and thus Sugano does not allow less than all of the rubber material injected from the hopper port to be forced into the cylinder. Therefore, Sugano cannot produce a reduction in the gauge fluctuation. Therefore, we would submit that claim 10, and all claims dependant thereon are patentable over Sugano for this additional reason.

Claim 14

Further, claim 14 recites “wherein diameter of the thread on an upstream side of the screw are made larger than diameters of the threads on a downstream side”. Again, Figs. 1 and 6, which the Examiner asserts teach the features of claim 14, do not show any variation in the height of the blades (flight portions). Further, Figs. 1 and 6 also do not show any variation in the diameter of the thread along the length of the screw, let alone the specific variation recited in claim 14. Thus, Applicant submits that claim 14 is patentable for at least this reason.

Claim 15

Further, claim 15 recites “wherein the diameter of the screw located below the hopper port is between 2% and 6 % smaller than the diameter of the screw at the downstream side owing to the reduced height of the flight at the part located below the hopper”. As discussed above, Sugano does not teach or even suggest any variation in the diameter of the screw along its length.

Further, even assuming *arguendo* that Figs. 1 and 6 do show some variation in the height of the blades of the screw along its length, which Applicant submits that they do not, Figs. 1 and 6 clearly do not show that variation within the narrow range of a 2-6% difference as claimed. As

Applicant has already noted, MPEP 2125 requires that in order to anticipate the structure recited in the present claims, Figs. 1 and 6 of Sugano must clearly show all the features recited **arranged in the same way claimed.**

Figs. 1 and 6 provide no basis of determining any dimensions of the shown components and **thus cannot show that a variation in diameter between 2 and 6%.** Thus, Applicant submits that Sugano does not teach or even suggest “the diameter of the screw located below the hopper port is between 2% and 6 % smaller than the diameter of the screw at the downstream side” as claimed. Therefore, Applicant submits that claim 15 is patentable over the applied reference for at least this reason.

Claims 12, 13, and 20

Claims 12, 13, and 20 all depend from claim 10, which has been shown above to be patentable over Sugano. Thus, Applicant submits that these claims are patentable at least by virtue of their dependency. For all the reasons discussed above, Applicant submits that the present claims are patentable over the applied references, and would request that the rejection be withdrawn.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880 via EFS payment screen. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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CUSTOMER NUMBER

Date: March 2, 2009

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